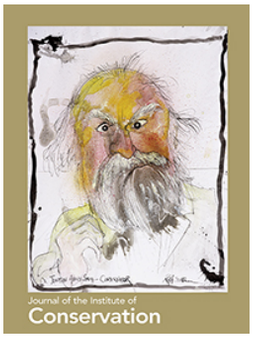

Journal of the Institute of Conservation

ISSN: 1945-5224 (Print) 1945-5232 (Online) Journal homepage: http://www.tandfonline.com/loi/rcon20

Reflections on the psychological basis for suboptimal environmental practices in conservation

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To cite this article: Jane Henderson (2018) Reflections on the psychological basis for suboptimal environmental practices in conservation, Journal of the Institute of Conservation, 41:1, 32-45, DOI: 10.1080/19455224.2017.1422777

To link to this article: https://doi.org/10.1080/19455224.2017.1422777

Published online: 08 Feb 2018.

Journal of the Institute of Conservation, 2018
Vol. 41, No. 1, 32–45, https://doi.org/10.1080/19455224.2017.1422777

Routledge
Taylor & Francis Group

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Reflections on the psychological basis for suboptimal environmental practices in conservation

Keywords
Ashley-Smith; truth; lies; psychology; standards; suboptimal behaviour

Introduction

In 1994, Jonathan Ashley-Smith urged the profession to be honest. The topic was environmental standards for loans and his call to arms was for the profession to start to 'tell it like it is'. In the written paper,[1] and conference presentation,[2] Ashley-Smith and his colleagues challenged some of our dearly held assumptions about protecting collections, questioned the truthfulness of our statements, advocated for acknowledging the possibility of not always having an answer, and asked what it is that the conservation profession finds it hardest to tell the whole truth about. Some of these points were further developed in Ashley-Smith's IIC Melbourne conference paper on professional uncertainty.[3] Prompted by those challenges, this paper examines three related areas: assumptions about protecting collections; the relationship between truth with ethics; and professional uncertainty, before asking why it appears to still be hard for conservators to 'tell it like it is'. When considering issues of attitude and behaviour such as assumptions and approaches, it is necessary to reflect on something of the psychology that influences them. Whilst a complete appraisal of the psychology of conservators is beyond the scope of this paper, it does suggest that understanding changes in behaviour is both central to improving practice and seriously under-represented in the conservation literature.

Evolving standards

Ashley-Smith and his colleagues asked us to rethink the over-reliance on narrow humidity ranges in environmental specifications and support any such requirement first with technical evidence. If this expression of need was clear in 1994, how far have we come as a profession to effect realistic environmental targets? The debate has remained current with both the International Institute of Conservation (IIC) and the International Council for Museums—Committee for Conservation (ICOM-CC) coming together to offer a joint declaration on environmental guidelines. They urge conservators to consider sustainability and local climate in setting temperature (T) and relative humidity (RH) parameters, and refer to recommendations from three documents to be used in appropriate contexts.[4] These guidelines set out more pragmatic loan conditions and offer the most internationally consolidated opinion since Garry Thomson's 'Class 1 standard' became the basis for a de facto international standard in 1986.[5]

It is interesting to look at the progress that has been made in delivering a more pragmatic and flexible standard for the museum environment as suggested in the IIC/ICOM-CC declaration by comparing the recommendations of the documents that form its basis (Table 1). In general terms, the movement within the sector is welcomed but does not radically shift from Thomson's recommendations, especially when his Class 2 standard is considered.[6] The outcome in terms of guidelines for humidity and

(Received 6 December 2017; Accepted 27 December 2017)

1 Jonathan Ashley-Smith, Nick Umney and David Ford, 'Let's be Honest—Realistic Environmental Parameters for Loaned Objects', Studies in Conservation 39, (1994), Issue sup.2: 'Preprints of the Contributions to the Ottawa Congress, 12–16 September 1994. Preventive Conservation: Practice, Theory and Research': 28–31, http://www.tandfonline.com/doi/abs/10.1179/sic.1994.39.Supplement-2.28? journalCode=ysic20 (accessed 28 November 2017).

2 Jonathan Ashley-Smith, 'Let's be Honest' (paper presented at the IIC conference, 'Preventive Conservation: Practice, Theory and Research', Ottawa, Canada, 15 September 1994), http://cool.conservation-us.org/byauth/ashleysmith/honest.html (accessed 28 November 2017).

3 Jonathan Ashley-Smith, 'Developing Professional Uncertainty', *Studies in Conservation* 45, (2000), Issue sup.1: Contributions to the Melbourne Congress, 10–14 October 2000. 'Tradition and Innovation: Advances in Conservation 2000': 14–17, http://www.tandfonline.com/doi/abs/10.1179/sic.2000.45.Supplement-1.14 (accessed 24 December 2017).

4 The joint ICOM-CC IIC document includes extracts from documents produced by the 'Bizot Group' (the International Group of Organizers of Large-scale Exhibitions), the Australian Institute for the Conservation of Cultural Materials (AICCM) and the American Institute of Conservation (AIC), see: http://www.icom-cc.org/332/-icom-cc-documents/declaration-on-environmental-guidelines/ (accessed 28 November 2017).

5 The Class 1 standard, as defined by Thomson, is 'appropriate for major national museums, old or new, and also for all important new museums': temp-

Table 1 A comparison between Thomson's 1986 environmental guidelines with the IIC/ICOM-CC 2014 recommendations.

Source	RH	Temperature (°C)
Thomson Class 1	50 or 55±5	19 winter to 24 summer
Bizot	40–60 < ±10% in 24 hours	16–25
AICCM	40–60	15–25
AIC	40–60	15–25
Thomson Class 2	40–70	Reasonably stable. > 11 to avoid condensation (p. 45)

temperature management can be seen as much as the eventual acceptance of a modified Class 2 standard as a reinvention of Thomson's Class 1.

If honesty is a requirement on the profession, then any critical self-reflection by the profession might ask why it appears to be so hard and take so long to agree and implement recommendations for the protection of collections? What is it that makes the Class 1 figures persist in the minds of managers and allow the Class 2 parameters to be ignored despite their obvious advantages from pragmatic and sustainability perspectives? It could be argued that the issue lies less in any correlation of moisture content to relative humidity and more in the correlation of the term 'Class 1' to a sense of 'prestige', with the psychology of professionals still a dominant factor even after the ratification of the IIC ICOM-CC statement. When aiming to progress professional practice by challenging assumptions about how best to protect collections, to align truth with ethics and manage uncertainty, the psychology of professionals is a determining factor.

Assumptions about protecting collections

When examining environmental guidelines, it makes sense to fully understand their overall purpose of protecting collections. To protect collections conservators give advice that they hope, or believe, will lead to a significant extension of the useable lives of the objects. One pre-requisite for preventing damage is to be clear about what damage actually is. In Ashley-Smith's 1994 IIC presentation he asked whether damage that we cannot see matters? Examining this from the perspective of light, it can be measured in 'Just Noticeable Fades' or 'Perceptible Changes'.[7] Measurements of degrees of damage illustrate a distinction between whether an (average) person can perceive a change or whether change can be detected by other means. These different measures directly address key concerns in conservation and ask difficult questions of the profession. What is needed for longevity? Is it the provision of extended use value or of material stability? How well and how consistently does the conservation profession define damage? Understanding the complex relationships involved in defining damage is one step towards unpicking conservation's difficult relationship with 'truth'.

Monitoring damage or monitoring the environment: a case of attribute substitution

If damage is defined as 'any undesirable change of state' conservators should be monitoring changes in state.[8] Change in an object's state—whether desirable or not—is measured as part of condition checking, often carried out on individual items for a specific purpose such as preparation for loan. To monitor a whole collection by condition checking is far from common, arguably unreliable and very resource intensive. Changes-in-state also correlate to the value of the object. A small scratch on the base of an archaeological ceramic might have minimal impact on its significance whereas a small scratch across the face of a renaissance portrait is perceived

erature: 19°C (winter) up to 24°C (summer) with a relative humidity of 50% or 55%±5%. See Garry Thomson, *The Museum Environment*, 2nd edn (London: Butterworth-Heinemann, 1986), 268–9.

6 The Class 2 standard is 'aimed at avoiding major dangers whilst keeping costs and alteration to a minimum, for example, climate control in historic houses and churches may have to be limited to class 2 specifications'—temperature should be 'reasonably constant' to stabilise at RH 40–70%. Thomson, *The Museum Environment*, 268–9.

7 As suggested in Jonathan Ashley-Smith, Alan Derbyshire and Boris Pretzel, 'Continuing Development of a Light Policy for the V&A', in preprints of the *13th Triennial Meeting, ICOM Committee for Conservation, Rio de Janiero, 22–27 September 2002*, ed. Roy Vontobel (London: James & James, 2002), 3–8.

8 See Jonathan Ashley-Smith, 'Definitions of Damage' (talk given in the session *When Conservator and Collections Meet* at the Annual Meeting of the Association of Art Historians, London, 7–8 April 1995), http://cool.conservation-us.org/byauth/ashley-smith/damage.html (accessed 28 November 2017).

as highly significant. Measures of change-in-state are therefore costly, complex, potentially unreliable to undertake and relate to a changing baseline, which, by any definition, is a complex issue.

Yet, with the exception of some monitoring of things such as crack formation, textile distortion and moisture content changes, the vast majority of monitoring in preventive conservation focusses on collecting environmental data, especially for temperature, relative humidity, light and pests. Each monitoring process seeks to record environmental vulnerabilities on different conceptual scales: 'incorrect' for relative humidity and temperature can indicate many different conditions; all light fades organic collections so 'correct' targets are set according to a composite of human needs and an ability to control exposure; and 'correct' pest levels are set at zero.

When examining environmental monitoring data, conservators have traditionally feared results that suggest that damage is likely, such as a RH fluctuation of greater than 10% in any one day or levels over 65%. This concern is commonplace in targets, loan agreements and conservation publications. Replacing a complex question with an easier to answer one is a very human way to deal with complexity and is described as *attribute substitution*.[9] Attribute substitution is a heuristic that saves time and effort and, as with any heuristic, there are valid reasons why it is more time and resource efficient to answer the substituted question. Attribute substitution can be problematic if the quality of decisions made in answering the simpler question are significantly poorer and where that loss of quality is disproportionate to any benefits gained in resources saved. In daily life many people assume that recognisable brands offer better quality products than un-familiar ones, which is a quick and effective decision strategy if they can afford either. On the other hand, choosing a car on the basis of its paint colour scheme might be seen by many as oversimplifying the decision process.

In preventive conservation, attribute substitution means that an easier to answer question such as 'has RH changed by x or exceeded y?' replaces a context-rich and complex question such as 'in this situation will this collection change in an unacceptable way as a result of this combination of climate variables?'. If an organisation can afford to deliver the specified RH without diversion of resources causing a negative impact elsewhere, the attribute substitution can be considered effective, whereas if the costs of the decision based on the replacement attribute are unacceptably high then a more precise focus on the real challenge presented would be more beneficial. A further issue with attribute substitution is how well any replacement attribute (e.g. RH change) correlates with the original concern (e.g. an unwelcome change in material state)—if a change in RH leads to no damage then, by definition, RH change is not the problem yet many professionals are locked in to monitoring and responding to RH change rather than any change in an object's state.

This is such a simple concept and yet it is not one the profession runs well with. Is this because, as a profession, we are not confident about what damage is, and by logical inference, what is safe? Figure 1 depicts a graph a colleague shared from a store in a museum in which she regularly inspects items and where no accelerated damage can be observed. She notes that 'guess what … everything appears to be fine'.[10] How many professionals would be prepared to say in public that such conditions are acceptable if they are not seeing decay at a rate out of proportion to anything in the collection's history?

Process control

Much of the damage conservators deal with is the outcome of processes that conservators largely understand. Indeed, some might argue that damage

9 The concept is described in Daniel Kahneman, 'A Perspective on Judgement and Choice', *American Psychologist* 58, no. 9 (2003): 697–720, http://www2.econ.iastate.edu/tesfatsi/JudgementAndChoice.MappingBoundedRationality.DKahneman2003.pdf (accessed 28 November 2017).

10 Sara Brown, conservator, personal communication, November 2017.

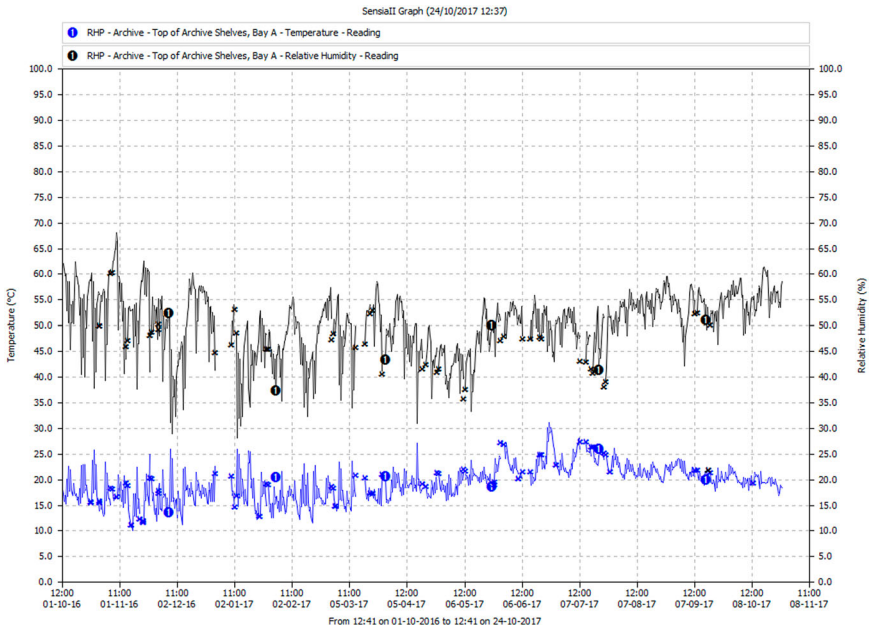

Fig. 1 Temperature and relative humidity readings over a 12-month period in an archive store at an unnamed museum.

can be defined in terms of the processes that cause it, as in 'damage is a result of deterioration'. The mechanism by which fluctuating RH changes moisture content leading to distortion is well described in the literature.[11] The comfort conservation finds in understanding the principle causes of damaging processes may explain why it is those factors that are heavily monitored. If someone is not confident about determining the outcomes of a process (i.e. the actual damage) it becomes easier to measure and control the implementation of the process itself. This can be imagined in terms of a conservator asking themselves the following: 'Is my object being damaged in a way I currently cannot see but someone might be able to detect at some point in the future with equipment I don't have?'. With such existential doubt it appears safer and more strategic to act in a way that is known to be safe, professionally defendable or at least approved by a manager.

Be safe, avoid damage

Damage could be defined by its oppositional conditions, for example, in terms of what is shown to be safe or unsafe. 'Known safes' offer certainty and, by way of an example, Thomson observed that the paintings from London's National Gallery exhibited far less damage when they were stored during WWII in caves in Wales, such that on their return information on those conditions, in which no damage occurred, was used to inform environmental targets for major national museums.[12] Working from known safe conditions might seem to be the logical way to deploy resources, especially as it gives a sense of adherence to best practice and, on first encounter, appears to offer a guarantee of safety. Such conditions will inherently have safety margins or buffer zones, although the necessary size of their tolerance may not be known. Any expenditure creates opportunity-costs which are the unseen consequences of diverted resources such that, for example, those committed to maintaining unused buffers are now not being spent on new shelving or training front of house staff to handle collections, meaning any potential benefits from those actions are never realised.

11 See, for example, Dave Erhardt and Marion Mecklenburg, 'Relative Humidity Re-examined', in *Preventive Conservation: Practice, Theory and Research. Preprints of the Contributions to the Ottawa Congress, 12–16 September 1994* (Ottawa: IIC, 1994), 32–8; Stefan Michalski, 'Relative Humidity: A Discussion of Correct/Incorrect Values', in *ICOM Committee for Conservation Tenth Triennial Meeting, Washington, DC, 22–27 August 1993: Preprints* (London: James & James Ltd, 1993), 624–9, http://www.academia.edu/741937/1993._Relative_humidity_a_discussion_of_correct_incorrect_values (accessed 6 December 2017).

12 Thomson, *The Museum Environment*, 268.

It is known that people apportion more blame to acts of commission rather than acts of omission,[13] thus there is less personal risk in following patterns of known safety, even if that practice is suboptimal in that it diverts resources from their most efficient use. As there is no explicit outcome from known safe conditions—apart from no damage to items—it makes the act of attribute substitution even more desirable such that processes not outcomes become the focus of daily practice.[14] Overinvesting resources to deliver unnecessarily generous safety margins may offer the feedback that no damage is happening due to environmental fluctuations, and it is this feedback that reinforces the practice. The consequences, say the lack of a spare trolley in the store, are not tied to the diversion of resources so that when an object is dropped in transition the feedback loop does not close on the over-cautious but expensive decisions made elsewhere.

To operate a 'known safe' system efficiently relies on the predictability of the scale of any damage threat. Much of resource investment in risk management is set by benchmarks derived from experience: the number of fires in similar buildings; high water points in floods; the scale of extreme weather events, and so on, and then set in normal distribution patterns. Normal distributions cannot predict—and thus protect—collections from any extreme 'Black Swan' events which otherwise reset the recorded limits of the scale of any threat.[15] Working well with contingency is a matter of effective risk-management, but we know that human efforts to conceive risk can be clouded by bias. Bias means that some risks are considered as being more present and urgent, based on their rarity, severity and locus of control,[16] whilst the likelihood of a chain of small risks and catastrophic Black Swan events are consistently underestimated.[17]

Conditions known to cause damage

An alternative to the 'known safes' are those conditions known not to be safe, or a 'known damage' condition. Stefan Michalski took the debate in this direction by pointing to 'evidence of the link between change in environment and changes in objects or materials', by testing materials to their detectable limits.[18] As Michalski points out, one challenge for defining a 'known damage' is whether a repetition of exposure to conditions that are known to have caused damage in the past would cause repetition of the damage. Indeed, one thing we might assume is that past damage in some sense 'proofs' collections from future damage.[19] Accordingly, a 'known damage' condition for a collection *in situ* will be any condition necessarily worse than previously experienced, although a prediction of how much worse this will be to cause damage is not precisely determined by the previous worst case. Such margins of tolerance are harder to define across complex collections which, in practice, often leads to any past extremes becoming the limit defining what is assumed as the now 'known safe' conditions. Conditions known to have caused damage present the conservator with exactly the same challenges as those with 'known safe' conditions. As such, the challenges of attribute substitution, process control and bias in assessment of risk all apply.

The public's view on damage

As part of a 2015 collections demography project, the public were asked what they consider to be unacceptable change and how long they expect things to last.[20] From the data there was some consistency with other research on people's expectations of what preservation means in that they tend to think in terms of being able to use something over generations: most respondents chose 'survival horizons' of 50, 100, 200 or 500 years.[21] What was interesting and perhaps surprising was that the public took how long something has already survived as a benchmark for its future survival: 'respondents tended to want older documents to last further into the future'.[22] Thus a

13 Cf. Jonathan Baron and Ilana Ritov, 'Omission Bias, Individual Differences, and Normality', *Organizational Behavior and Human Decision Processes* 94, no. 2 (2004): 74–85.

14 Cf. Rob Waller and Stephan Michalski, 'A Paradigm Shift for Preventive Conservation, and Software Tool to Facilitate the Transition', in preprints of the *ICOM 14th Triennial Meeting, The Hague, 12–16 September 2005*, Vol. II (London: James & James, 2005), 733–8.

15 Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable* (New York: Random House, 2007).

16 See, for example, Jonathan Ashley-Smith, *Risk Assessment for Object Conservation* (London: Butterworth-Heinemann, 1999), 281–2; and Paul Slovic, 'Risk Perception and Affect: Current Directions', *Psychological Science* 15, no. 6 (2006): 322–5.

17 See Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2011).

18 The quotation is from Ashley-Smith, 'Let's be Honest'.

19 Stefan Michalski, 'The Ideal Climate, Risk Management, the ASHRAE Chapter, Proofed Fluctuations, and Toward a Full Risk Analysis Model' (contribution to the Getty Conservation Institute Experts' Roundtable on Sustainable Climate Management Strategies, April 2007, Tenerife, Spain), http://www.getty.edu/conservation/our_projects/science/climate/paper_michalski.pdf (accessed 28 November 2017).

20 For details of the project, *Collections Demography—On Dynamic Evolution of Populations of Objects*, see https://www.ucl.ac.uk/bartlett/heritage/research/projects/project-archive/collections-demography-dynamic-evolution-populations-objects (accessed 28 November 2017). For a discussion of

quite complex set of values seem to be at play: for example, when asked about perceptions of damage to books the public did not seem to mind the odd fade, crease or tear so long as they can still read the page. This suggests the public has a functional regard to value, at least in this context, in contrast to the more prevalent conservation approach of accumulating any instance of damage and attempting to aggregate its 'score' against an item's totality or most significant value or feature.[23]

The profession has made some progress in understanding what the public consider as 'damage'. Is it therefore the case that the best way to define damage is simply to reflect public concerns? If so what would the consequences be for the profession in prioritising an item's use-value over its condition and managing collections on the premise that the longer something has survived the longer it should continue to do so? Conceptions of damage that reflect anything other than a simple material change in state require a full engagement with 'value' in terms of scales of significance and use and incorporating multiple human perspectives including any obligations to the past as well as any consequences for the future. Any such discussion, although informed by understanding of material change, clearly hinges on understandings of social values and adds another dimension of human study required for conservators to fully explore their goals and priorities for protecting collections.

'use value' see Catherine Dillon, William Lindsay, Joel Taylor, Kalliopi Fouseki, Nancy Bell and Matija Strlič, 'Collections Demography: Stakeholders' Views on the Lifetime of Collections', in *Climate for Collections Standards and Uncertainties*, ed. Jonathan Ashley-Smith, Andreas Burmester and Melanie Eibl (London: Archetype Publications Ltd, 2013), 45–58.

21 See, for example the paper on the views of museum professionals by William Lindsay, 'Time Perspectives: What "The Future" Means to Museum Professionals in Collections-care', *The Conservator* 29 (2005): 51–61.

22 Dillon et al., 'Collections Demography', 54.

23 Cf. Joel Taylor, 'An Integrated Approach to Risk Assessment and Condition Surveys', *Journal of the American Institute for Conservation* 44 (2005): 127–41.

Polarities of damage

There are other conceptions of damage and protection that are used within the sector. Some attempt to balance competing priorities such as of current and future user's needs and may do this by offering a defined ('acceptable') rate of decay. Some are shaped by what is possible, for example, what is 'technically possible in terms of control',[24] or what the public believe to be possible in terms of what they can reasonably expect a museum to offer. There are even some that deal with the impossible by engaging in futile but energy intensive attempts to prevent entropy. When considering risk management in terms of public expectation the dual conditions of how much change has happened and how the public evaluates that change must be considered to make policy that satisfies expectations. Adding in the needs of future generations requires the sociological study of intergenerational equity.

24 Ashley-Smith, 'Let's be Honest'.

The setting of appropriate standards requires the sense of what is damage and what constitutes protection against damage to be clarified, and this article has so far discussed several concepts that could be used as a baseline, as indicated in Table 2, which lists different approaches to defining damage with their mirrored implications for what it means to protect collections. In the spirit of Ashley-Smith's exhortation to examine dearly held assumptions, an examination of the many different meanings implied in concepts of damage and protection exposes inconsistency. Although some in the profession may not believe there is a problem in defining damage or protection—because the concepts are either self-evident or covered by a preferred option—in reality, every time a different modality of damage or protection is used, there are distinct and different consequences for conservation. Each definition impacts decision-making, resource investment, risk management and has outcomes for users that present different trajectories. As a minimum, conservators should learn to express which modality of damage or protection they are considering when acting to protect collections.

The conservation sector has many able scientists who can offer excellent methods for measuring changes in state,[25] however, even with this knowledge, there is no universally accepted understanding of damage. Damage is as much a social construct as a physical outcome. So, whilst the sector

25 For example, see this paper from a series of studies which link material condition to value assessment: Matija Strlič,

has operated with the underlying assumption that it is the ability to describe changes in state that leads to progress in protecting collections, in practice it is also the ability to engage with corporate, social or political priorities that is equally essential to such 'progress'. If challenging assumptions is an essentially human activity then it follows that the truthfulness by which those assumptions are described must also be governed by psychological factors.

Truthfulness: can it be ethical to lie?

Ashley-Smith identified a scale of motivations for a person to lie—whether personally or on behalf of an institution—where at best it is done as a means to an end, and at worst, to hide their own ignorance.[26]

Beginning with the more defendable position can, or even should, a conservator lie as a means to an end? In the UK Institute of Conservation's (Icon) Code of Practice there is no specific mention of lying, although there is clear indication that professionals need to act within the law, treat others fairly, document and disclose. There is also the imperative to 'strive to conserve cultural heritage so that it can be continued to be used for education and enjoyment, as reliable evidence of the past and as a resource for future study'.[27] An imaginative conservator may find room to manoeuvre here and feel justified in offering precautionary advice that they believe will create safe conditions even when they do not know for certain that failure to follow their advice would see the perceived threat materialise. In contrast, the American Institute of Conservation's (AIC) Code of Ethics makes a very clear statement on the topic of lying: 'the conservation professional shall act with honesty and respect in all professional relationships', and this is as prominent as the requirement to endeavour to 'limit damage or deterioration to cultural property'.[28] What happens if those commands conflict, how are they to be arbitrated and who decides? A thought experiment illustrates this dilemma. Imagine a conservator facilitating the loan of an important object and who examines the environmental conditions in a potential host museum and finds them significantly outside the normal international benchmarks for loans. If the conservator has no evidence that these conditions will damage their object should they say they might? The conservator is liaising with the marketing team who are setting up an extravagant world tour and there is much enthusiasm for the project and the conservator believes that any nuance will not be well received. If, in order to limit damage and communicate clearly, they state categorically that these conditions would cause damage, is it really a lie? Well yes, but is it unethical? In this instance the conservator may conclude that their action to protect the cultural property is entirely in line with their abiding ethical code. Any uncertainty about outcomes from poor conditions can be ignored as certainty will only materialise when damage occurs which self-evidently fails the ethical code. The requirement to 'limit damage' is a far broader mandate than to 'act with honesty' in a sector where uncertainty is built in.

'High other benefit' and 'poor influence' techniques

Situations where a person arguing for a particular outcome believes that their influence will generate benefits for others can be described as acting for a 'high other benefit'.[29] This might be considered when advocating for children, animals or collections. In these situations, the persuader is not arguing from a perspective of improving something for themselves and this describes most of the ways in which conservators attempt to exert their influence. Alarmingly, research suggests that in such 'high other benefit' situations people show a greater willingness to ignore ineffective or unacceptable aspects of their influence and will be 'more

Carlota Grossi-Sampedro, Catherine Dillon, Nancy Bell, Kalliopi Fouseki, Peter Brimblecombe, Eva Menart, Kostas Ntanos, William Lindsay, David Thickett, Fenella France and Gerrit De Bruin, 'Damage Function for Historic Paper. Part II: Wear and Tear', *Heritage Science* 3, no. 36 (2015), https://heritagesciencejournal.springeropen.com/articles/10.1186/s40494-015-0065-y (accessed 28 November 2017).

26 Ashley-Smith, 'Let's be Honest'.

27 The Institute of Conservation's Code of Conduct, 2014, http://icon.org.uk/system/files/documents/icon_code_of_conduct.pdf (accessed 28 November 2017).

28 American Institute of Conservation, *Code of Ethics and Guidelines for Practice*, http://www.conservation-us.org/our-organizations/association-(aic)/governance/code-of-ethics-and-guidelines-for-practice (accessed 28 November 2017).

29 Cf. Franklin Boster, 'Commentary on Compliance Gaining Message Behaviour Research', in *Communication and Social Influence Processes*, ed. Charles R. Berger and Michael Burgoon (East Lansing, MI: Michigan State University Press, 1995), 91–114.

Table 2 Polarities of damage and protection.

Vulnerable to damage	Protected
Outside of known safe limits	Inside known safe limits
Inside known damage parameters	Outside known damage parameters
Uncontrolled conditions	Controlled conditions
Inadequate resources for control	Sufficient resources for control
Conditions out of line with policy commitments	Conditions in line with policy commitments
Perceptible change	No perceptible change
Measurable change	Non-measurable change
Unacceptable change in state	Acceptable change in state
Decaying faster than a rate set by policy	Decaying at or slower than a rate set by policy
Survival less than an agreed collection lifetime	Survival of at least an agreed collection lifetime
Unfair intergenerational distribution of resources	Fair intergenerational distribution of resources

aggressive and persistent in their compliance-gaining attempts'.[30] This is a third motivation for lying, and one neither for personal nor institutional gain, but on behalf of the objects, as the conservator designates themselves as 'giving voice' to the objects' needs. Where demands to meet tight environmental conditions in a loan recipient institution not actually in place in the lending institution might be expected to create an uncomfortable cognitive dissonance, with the high other benefit motivation in mind, this can be comfortably reprocessed as being an altruistic act made by the conservator on behalf and for the sake of the objects.

When advocacy in 'high other benefits' is unsuccessful, the persuader might feel justified in simply ramping up their strategies without reference to ethical codes. Indeed, such is the belief in 'high other benefits' that they can go so far as to convince themselves 'of the righteousness of inhuman behaviour'.[31] Those with significant experience in the heritage world will perhaps be able to recall their own examples of the sometimes overzealous communication by conservators when advocating for collection care and how this has raised barriers to communication rather than facilitating an exchange. Such psychological insight into the tendency to systematic bias in people's self-perception, especially where the beneficiaries from the argument are deemed to be 'other', such as a collection, perhaps help explain something of the challenge conservators face in equitably appraising conditions of 'known safe' and 'known damage'.

30 Boster, 'Commentary on Compliance', 102.

31 Boster, 'Commentary on Compliance', 103.

Value conflicts

Although professional codes of ethics urge conservators to operate honestly or at least within the law, it is the conservator who navigates any potential conflict between getting what is 'best for the object' with the exhortation for 'full and honest disclosure'. Icon's professional standards address this, noting that the professional conservator, 'is able to handle value conflicts and ethical dilemmas in a manner which maintains the interests of cultural heritage'.[32] Does this help tip the balance in favour of protecting collections over full and entirely honest disclosure? The problems associated with 'high other benefit' thinking suggest that when advocating for collections, conservators can become wilfully blind to their own poor influence technique. This, in turn, makes it impossible for the conservator to identify their own unacceptable behaviour and to effectively navigate value conflicts, thereby confirming the assertion that 'the conservator can never be wrong'.[33]

On the other hand, where lies are being told not to protect collections but to protect the conservator's ego, then the 'high other benefit' excuse

32 Cf. Icon's Professional Standards: Professional Judgement and Ethics, http://icon.org.uk/system/files/documents/professional-standards-2016.pdf (accessed 28 November 2017).

33 Ashley-Smith, 'Let's be Honest'.

disappears and is replaced by some internalised reward of disguising ignorance and being relieved of the responsibility of resolving it. Some professionals might admit at the end of a long night or a long career to underhand dealing such as fixing the arm of the thermo-hygrograph with blu-tack or editing out extreme data points from data logger's spread sheet.[34] For the most part such confessions will be rare as they require a degree of self-awareness almost always limited to informal and non-public spheres. In most cases any such dishonesty will be rationalised to avoid cognitive dissonance with the justification that the lie was for a good cause.

34 The examples are from anonymous correspondents.

Truth and lies: the case for suboptimal behaviour

> 'Freethinkers are those who are willing to use their minds without prejudice and without fearing to understand things that clash with their own customs, privileges, or beliefs. This state of mind is not common but it is essential for right thinking … .' (Leo Tolstoy, *War and Peace*)

Ashley-Smith suggests in 'Let's be Honest' that the conservation profession had become locked into a pattern of behaviour of not asking and not telling, in which one side is 'economical with the truth' and the other agrees to maintain an illusion, by turning a 'blind eye'. The entire shared acceptance is described as 'a game where both sides can win and nobody gets hurt'.[35] From the gauge of train track to the use of the Qwerty keyboard, there may be many examples in life where there is potentially a better way to operate but the cost of changing is too much for a system to bear in the short term. As a result, the community continues to invest in and embed suboptimal practices. Behaviours that are suboptimal but continue to operate because the cost of changing direction is deemed too high are known as 'locked in'. Costs of change can be emotional as well as resource-based. For museums the cost of changing environmental standards can be related both to the already-sunk financial cost made concrete in the installation and operation of air conditioning systems to deliver the magic environmental numbers as well as the emotional costs or the risk of 'loss of face' from the admission that such targets have never been necessary.[36] This would mean that what went before was, at best, unnecessary and, at worst, wrong. To break out of patterns of conformity requires a non-conformist or anti-conformist who is prepared to advocate a different point of view.[37] If the non-conformist is able to influence others in their networks and is sufficiently well connected, this can lead to a break down in the old order and allow the emergence of a new idea or technology. Any such change, even from the suboptimal to the preferable, requires a change-agent—perhaps even a 'gun for hire'—to influence its networks. Although conservators may like to imagine that the basis for decision-making in the sector is about optimisation in a process of maximising utility, this is not the only decision-making mode.[38] Other forms of decision-making exist and an awareness of this might help understand how agents inspire change in those around them. In a locked-in situation such as a de facto standard that is unnecessarily tight, the cost of change, at least in the short term, will be higher than the cost of maintaining the status quo.[39] An investment for change will necessarily include investing in some form of psychological protection to avoid the embarrassment of any 'u-turn' or 'climb-down' by those who must effect change to their original specifications.

For conservators to engage in more truth-telling they must do more than gather truths. The management of the experience of telling truths, of smoothing the psychological and resource-based barriers to change and protecting egos must all be considered. These challenges also assume that there is a truth to tell—examining professional uncertainty may help to expose where that is not the case.

35 Ashley-Smith, 'Let's be Honest'.

36 See, for example, James P. Dillard, 'The Nature and Substance of Goals in Tactical Communication', in *The Psychology of Tactical Communication*, ed. Michael J. Cody and Margaret McLaughlin (Clevedon, England: Multilingual Matters Ltd, 1990), 70–90.

37 Lex Hoogduin 2016. Decision Making in a Complex and Uncertain World "https://protect-us.mimecast.com/s/vzN0CQWNOwhkkAlyyukKDnB?domain=rug.nl" http://www.rug.nl/e-learning/projecten/mooc/complexity-uncertainty?lang=en (accessed on 21/01/2018).

38 Cf. Jane Henderson and Robert Waller, 'Effective Preservation Decision Strategies', *Studies in Conservation* 61, no. 6 (2016): 308–23.

39 Cf. Jane Henderson and Shumeng Dai, 'Towards a Common Understanding of Standards?', in Ashley-Smith, Burmester and Eibl, *Climate for Collections Standards and Uncertainties*, 11–24.

Professional uncertainty

Within the murky domain of truth and lies it is the unknown that is hard to manage: those tricky Schrödinger-like facts. Icon's Code of Ethics states that the professional must be honest about what they don't know: 'you must be aware of and acknowledge your limits of understanding and ability'. Is the profession honest about what we cannot do, the things that fail and what we don't know? To manage the limits of understanding we must find a way to manage professional uncertainty.[40]

1 Cannot do

Within commonly applied museum standards conservators are challenged to ensure the care of everything a museum collects.[41] This codifies the requirement of care, although the concept of protection remains multi-dimensional. The pragmatic caring principle of 'this decay is at a rate that I deem acceptable' is embedded in common conservation practice such as in budgeting for lighting. The rate is framed by principles that set preservation timetables in terms of generations. For example, is the profession able to predict the 'expected collection lifetime' for complex collections as set out in the BSI specification for managing environmental conditions?[42] Whilst parts of the profession, such as those working with industrial and contemporary art collections, do engage in discussions about operational lifetimes, this apparently sensible mandate does not appear to have taken hold in the sector as a whole, perhaps simply because it is something that the sector cannot do.

More fundamental is how the profession behaves when the lifetime of something is measured in timescales of less than a generation? How often are conservators honest in admitting that they cannot preserve some materials and constructions in timespans of generations? Considering modern materials such as plastics, honesty about current limitations in practice and options for intervention means that ensuring preservation for only a few years is the maximum lifetime that can—or should—be expected.[43] If the expectation of preservation is always centred on the present generation passing objects forward to future generations, then preservation becomes an infinite regress and an impossible task.

2 Failure

How honest is the profession about the failure to preserve or about those projects that don't work or deliver considerably fewer benefits than predicted? For conservation where there are a plethora of reports of successful interventions there is also an absence of reports on projects that were not so successful. Failure to report can range from the benign, where nothing much happened, to the concerning, where an object was damaged but not admitted in public. There has been at least one attempt to gather lessons from failures in the profession, but other than the publication of the series *Recent Setbacks in Conservation* from 1985 to 2001, few such bold acts have been repeated.[44] Within the heritage sector the lack of admission of failure is seen as a barrier to innovation, yet while professionals agree on the value of learning from failure, few offer actual examples and the solution is often to keep failures to private exchanges and successes in print.[45]

Beyond the specifics of conservation as a discipline, academic writing is beset by institutional targets that reward only paradigm shifting and internationally significant outputs.[46] This means that repeat studies, reports of inconclusive outcomes and downright failures have no value in a 'points-mean-prizes' academic culture.[47] Academics researching conservation questions must deliver impact under a rewards-based regime and publish in high impact journals read by almost none of the profession. Journals achieve high impact because they are read and cited extensively and as it is a specialist field, conservation literature can never compete.[48] Conservation literature,

40 Joel Taylor, 'In the Quest for Certainty: Tensions from Cause-and-Effect Deductions in Preventive Conservation', *Journal of the Institute of Conservation* 41, no. 1 (2018): 16–31.

41 Cf. the Arts Council England 2004 Accreditation Collections Development Policy Template, http://www.artscouncil.org.uk/what-we-do/supporting-museums/accreditation-scheme/ (accessed 24 December 2017).

42 Cf. British Standards Institute, PAS 198: 2012 Specifications for Managing Environmental Conditions for Cultural Collections.

43 See, for example, the recorded discussion on *The C Word Podcast S02E06: Replicas, Surrogates, and Digitisation*, published by The C-Word, a UK-based independent conservation forum, http://thecword.show/2017/11/01/s02e06-replicas-surrogates-and-digitisation/ (accessed 24 November 2017).

44 See Volumes 1–7, *Recent Setbacks in Conservation* (Ottawa: International Institute for Conservation-Canadian Group, 1985–2001). One example is found in a recent article that describes how failure informed a successful treatment: Christa Gerdwinkler, 'Consolidation of a Sepiolite-rich Sandstone—Learning from Failure', *Journal of the Institute of Conservation* 39, no. 2 (2016): 110–8, http://www.tandfonline.com/doi/full/10.1080/19455224.2016.1210016 (accessed 27 December 2017).

even if read by every single professional, can never have a readership of more than tens of thousands and citations of even the most influential papers will barely reach double figures.[49] Reporting failure becomes a thankless task and practitioners perhaps risk their career if they were to do so. There are few rewards to be had in sharing failures despite its potential benefit to the collective. This is a suboptimal construction that can only be overcome by a collective commitment to protecting individuals who do come forward and share lessons from failure with the group.

Conservation intervention is often high risk, permanent and irreversible which can be problematic given that the meaning of the objects conservators seek to preserve have no such permanence nor singularity.[50] Preventive conservation is no exception to this: setting target conditions, selecting materials for inclusion in showcases or managing levels of access all fall under the remit of preventive conservation but if misjudged can lead to permanent and irreversible change. Where there has been a call for the profession to offer the collective opportunity to learn from failures, its authors point out that other professionals in high-stake roles share errors via no-blame reporting schemes and that these are used to drive up standards and quality.[51] In discussing why this does not happen in conservation they note that the profession has 'paid little attention to the cognitive patterns and limitations of conservators themselves'. Added to dealing with the challenge of complexity that is built into collections with huge diversity of materials, condition and significance, risks can never be fully understood and this can either be considered as failure or can be accepted as an unavoidable component of professional uncertainty.

3 Don't know

Are conservation practices evidence-based? Do conservators fully understand the consequences of the decisions that they make and is it even reasonable to expect them to? Practitioners may look to those with time for research for answers but this requires clear lines of communication between practitioners and researchers. Conservation scientists predominantly offer a reductionist approach to objects where their understanding of what an object means is based upon their ability to analyse it scientifically. This makes sense as a focus but if that focus anticipates that an object can be fully understood technically it creates a dislocation between the materials scientist, their conservation colleagues and the public. Poor communication will result in a lack of mutual understanding between researchers who deal in precision and control and practitioners operating in a world with significant variability and uncertainty. What is argued here is that there is the additional challenge of ensuring that conservation research also engages with the complex psychological challenges in the sector.

To improve communication both sides must be able to access each other's work, yet many practitioners do not have access to the high impact factor journals in which researchers are encouraged by academic institutions to publish. There is little chance for practitioners to discover research in journals beyond their horizon or their budget. If we have learnt anything from the last 25 years it is that such approaches lead to a widening gap between the science researchers and conservation practitioners, with the latter in danger of being driven down to the role of routine housekeeping and procedural driven data collection.

Professional uncertainty is far more than a 'to do list' or a research programme. It requires both the infrastructure and the personal commitment to examine the 'cognitive patterns' of professionals and to make it an essential facet of our research culture.

45 See for example the @heritagechat 'Twitter' feed on 16 November 2017, 'Innovation and Entrepreneurship in the Heritage Sector—Are We Doing Enough?, broadcast by the UK's 'Heritage 2020' group, an alliance of conservation agencies. As part of the feed the question was asked 'should we do more to promote and celebrate failure in order to encourage calculated risk-taking and innovation?'. The feed, including responses to the question, is archived on https://storify.com/HeritageChat/innovation-and-entrepreneurship (accessed 24 November 2017).

46 See for example the guidelines for the UK's *Research Excellence Framework* (REF), launched in 2014 as a 'new system for assessing the quality of research in UK higher education institutions', http://www.ref.ac.uk/2014/ (accessed 28 November 2017).

47 See, for example, psychologist Jon Sutton interviewing Professor of Biological Psychology Marcus Munafò, 'There's This Conspiracy of Silence Around How Science Really Works', *The Psychologist* 30, (2017): 36–9, https://thepsychologist.bps.org.uk/volume-30/december-2017/theres-conspiracy-silence-around-how-science-really-works? (accessed 24 December 2017).

48 For example, the Journal Impact Factor for *Studies in Conservation* is 0.578 which compares unfavourably with the influential science journal *Nature* (40.13), or journals servicing larger professional cohorts such as, for example, *Corrosion Science* (5.245).

49 Cf. the metrics for Ashley-Smith, Umney and Ford, 'Let's be Honest' with seven citations and Ashley-Smith's free-to-view 2016 article 'Losing the Edge: The Risk of a Decline in Practical Conservation Skills', which has 38 citations: http://www.tandfonline.com/doi/citedby/10.1179/sic.1994.39.Supplement-2.28?scroll=top&needAccess=true#metrics-content, http://www.tandfonline.com/doi/citedby/10.1080/19455224.2016.1210015?scroll=top&needAccess=true#metrics-content (both accessed 28 November 2017).

50 Cf. Jane Henderson and Tanya Nakamoto, 'Dialogue in Conservation Decision Making', *Studies in Conservation* 61, no. Supplement 2 (2016): 67–78.

51 Michele Marincola and Sarah Maisey, 'To Err is Human: Understanding and Sharing Mistakes in Conservation Practice', in *ICOM-CC 16th Triennial Conference Preprints, Lisbon, 19–23 September 2011*, ed. Janet Bridgland (Almada: Cri-

Challenges for the future

If Ashley-Smith's original exhortation to 'tell it like it is' is complex, its general thrust that we should offer honest assessment remains as valid and important today, and so what aspects of contemporary practice might bear such scrutiny?

1 Fluctuations

One challenge the profession could face head-on is the concern with environmental fluctuations. Whilst small fluctuations may seem safer than large ones (even around a floating set point), demanding strict environmental controls creates an inherently vulnerable system reliant on large pieces of equipment with a high energy consumption. Whilst flat lines can be maintained for a convincing time, and certainly long enough to collect impressive enough data sets, this cannot offer a cast iron guarantee for similar delivery over decades. A single power failure, or delay in procedure or maintenance, will see the system halt with a consequent large and un-precedented spike or discrepancy. Ideally a holistic building system should be conceived with wider tolerances where fluctuations are considered acceptable. This would allow for a more natural passive system that gradually changes with external conditions or internal load.[52] Such a system, if subject to massive failure, is less distanced from its initial conditions and so any resultant changes will be less dramatic. Allowing small doses of unpredictability can enhance the ability of a system to cope with the unexpected, and has been described as having 'antifragility'.[53]

Telling it like it is would apply to the longitudinal time-based consequences of our specifications. When quoting targets and ranges for design conditions, conservators should also state over how many decades or generations they expect any degree of consistency to apply. In addition to parameters, tolerances, ranges and design conditions, environmental specifications should offer a clear statement about how long they should be effective for. Such information might provide a valuable insight for engineers to understand our comparatively unusual expectations and place consistency on a more even footing with stability and set points. It would begin to manifest more concretely the profession's general desire to hand things from generation to generation within the framework of the operating systems being installed to deliver this. No plant can realistically deliver reliability over generations so setting the expectation would return the focus to a more holistic system approach where mechanical solutions are only one strand in environmental control, integrated with building design and operating systems.

2 Focus

The things that people discuss become the focus of thoughts and consequently actions. When the discussion about protecting collections is about responses to changes in relative humidity this becomes a focus of practice. In reality much damage in museums happens through careless handling, but because it is not very interesting to talk about, it rarely features in the literature. English Heritage conducted an extensive survey of their collections and found that the two highest risks were: (a) display and storage conditions and (b) dust, dirt and handling.[54] Mitigation activities for the display and storage related to physical protection such as repacking and protecting furniture during events. Patterns of damage such as handlers dropping an object are experienced as stochastic, that is, unpredictable events. Diagnosis of the cause is often neglect, lack of concentration or the absence of the 'common' from 'common sense', and mitigation of such prosaic occurrences are hard to elevate into academic publication. As a profession there is a

tério, 2011), http://www.academia.edu/3430267/To_Err_is_Human_Understanding_and_Sharing_Mistakes_in_Conservation_Practice (accessed 28 November 2017).

52 Denmark-based conservators Tim Padfield and his colleagues have championed such an approach in, for example, Tim Padfield, Poul Klenz Larsen, Lars Aasbjerg Jensen and Morten Ryhl-Svendsen, 'The Potential and Limits for Passive Air Conditioning of Museums, Stores and Archives', in *Museum Microclimate* (contributions to the 2007 Museum Microclimate conference, Copenhagen, November 2007), ed. Tim Padfield and Karen Borchersen (Copenhagen: National Museum of Denmark, 2007), 191–8, http://www.conservationphysics.org/musmic/musmicbuf.pdf; and Tim Padfield, 'Simple Climate Control in Archives is Hindered by Too Strict Standards', in *Proceedings of the 8th Symposium on Building Physics in the Nordic Countries* (Copenhagen: Technical University of Denmark, 2008), 14–29, http://www.conservationphysics.org/ppubs/simple_archives.pdf (both accessed 28 November 2017).

53 See Nassim Nicholas Taleb, *Antifragile: Things that Gain from Disorder* (New York: Random House, 2013).

54 See Amber Xavier-Rowe and Claire Fry, 'Heritage Collections at Risk: English Heritage Collections Risk and Condition Audit', in Bridgland, *ICOM-CC 16th Triennial Conference Preprints*, http://icom-cc-publications-online.org/PublicationDetail.aspx?cid=3d0e5029-

335b-421d-a5a6-9ca194fa6b80 (accessed 28 November 2017).

challenge to investigate and discuss the things that do damage and not just that which makes good graphs, talks or publications.

Conclusion

Conservation involves a set of challenges around protecting collections that have been recognised for decades. Progress has been made, but there is no automatic transmission from finding a correlation between environmental conditions and changes to the collection to the decisions being made about environmental conditions in institutions. There is not a well-established link between knowledge and practice. As a profession, our research tends towards material science and our practice towards process control. Materials science research provides vital evidence for decision-making but hard facts only take things so far. Suboptimal behaviours persist despite the existence of knowledge and this means that the psychological basis for sticking to existing practice to the detriment of truth and efficiency must be examined. 'Conservation is as much a people-focussed enterprise as a material focussed one' yet, as a profession, we have not developed our ability to study the people as well as we have the study of materials.[55] It is a suboptimal feature of conservation that the distribution of research effort between technical and psychological questions is not in proportion to our need to understand both aspects and their bearing on conservation decisions. Suboptimal behaviours persist because change is difficult and costly and not because people don't know that alternatives exist. The important lesson from the last 25 years is that to change standards we have to change attitudes.

55 Mary Jo Lelyveld, AICCM 2017 conference Twitter feed, 31 October 2017, https://twitter.com/AICCM_OZ/status/925488502522839040 (accessed 6 December 2017).

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Acknowledgements
With thanks to the Editor for his encouragement and support to submit to this special edition and to the reviewers for their generous support in finalising this article.

Abstract
Jonathan Ashley-Smith's 'Let's be Honest' presentation and paper from the 1994 International Institute for Conservation (IIC) conference on preventive conservation is the starting point for this article which considers the evolution of environmental standards to ask whether it is technological or psychological factors that have initiated their greatest change. It examines the implications of categorising types of damage for decision-making and asks whether understanding damage as a process rather than an outcome contributes to a cautionary approach to environmental standards in conservation. The article considers the possible psychological justifications used by those advocating standards for collections and asks whether these may lead to behaviour which is ineffective or ethically compromised. Challenging questions are then asked of the profession about what it cannot do, does not understand, and where it fails. The article concludes that although conservation has made progress in understanding materials and their properties to inform the implementation of environmental standards, it has made significantly less progress in understanding how and why decision-makers introduce and apply standards.

Résumé
«Réflexions sur le fondement psychologique conduisant à des pratiques environnementales suboptimales en matière de conservation» La présentation et l'écrit 'Soyons honnêtes' de Jonathan Ashley Smith lors de la conférence de l'Institut International de Conservation (IIC) en 1994 sur la conservation préventive sont le point de départ de cet article. Celui-ci examine l'évolution des normes environnementales afin d'évaluer si ce sont les facteurs technologiques ou psychologiques qui ont initié leur plus grandeévolution. Il examine les implications de la catégorisation des types de dommages dans la prise de décision et se demande si la compréhension des altérations comme processus et non commerésultat contribue à une approche prudente des normes environnementales en matière de conservation. L'article étudie les justifications psychologiques possibles présentées par ceux qui préconisent des normes pour les collections et demande si elles peuvent conduire à un comportement qui est inefficace ou compromis sur le plan éthique. Des questions délicates sont ensuite posées à la profession sur ce qu'elle ne peut pas faire, ne comprend pas et là où elle échoue. L'article conclut que bien que la conservation ait progressé dans la compréhension des matériaux et de leurs propriétés pour guider la mise en œuvre des normes environnementales, elle a fait beaucoup moins de progrès pour comprendre comment et pourquoi les décideurs introduisent et appliquent les normes.

Zusammenfassung
„Reflektionen über die psychologische Basis suboptimaler Praktiken im Kontext von Umgebungsbedingungen in der Restaurierung"
Jonathan Ashley Smiths Paper und Präsentation 'Let's be Honest' (Lasst uns ehrlich sein), gegeben auf der IIC (International Institute of Conservation) Konferenz zur präventiven Konservierung 1994, ist der Ausgangspunkt diesen Artikels. Er untersucht die Evolution der Klimastandards vor der Hintergrundfrage, ob es technologische oder psychologische Faktoren sind, die die größten Veränderungen bewirkt haben. Er untersucht auch die Implikationen einer Kategorisierung von Schadensarten für eine Entscheidungsfindung und hinterfragt, ob das Verständnis der Schäden eher als ein Prozess und weniger als ein Resultat zu einem konservativeren Zugang zu Klimastandards in der Restaurierung führt. Der Artikel beleuchtet die

möglichen psychologischen Rechtfertigungen, die von denjenigen eingesetzt werden, die die Standards für Sammlungen festlegen und überlegt, ob diese zu ineffektivem oder ethisch fragwürdigem Verhalten führen. Schließlich werden herausfordernde Fragen an den Berufsstand gestellt: was kann er nicht, was versteht er nicht und wo hat er versagt? Als Fazit stellt der Artikel dar, dass, obwohl Fortschritte im Materialverständnis und dessen Einfluss auf Klimabedingungen gemacht worden sind, viel weniger Fortschritt dabei gemacht worden ist nachzuvollziehen, wie und warum Entscheidungsträger Standards einführen und anwenden.

Resumen
"Reflexiones sobre los fundamentos psicológicos aplicados a prácticas ambientales no óptimas en conservación"
Este artículo parte de la presentación y del documento sobre conservación preventiva 'Seamos honestos' de Jonathan Ashley Smith en la conferencia de 1994 del Instituto Internacional para la Conservación (IIC). En este documento el autor examina la evolución de los estándares ambientales y cuestiona si los mayores cambios han sido iniciados por factores tecnológicos o psicológicos. Considera las consecuencias de tomar decisiones basadas en la categorización de tipos de daños y pregunta si entender el daño como un proceso en lugar de un resultado contribuye a un enfoque preventivo de los estándares ambientales en conservación. Este artículo considera las posibles justificaciones psicológicas utilizadas por quienes defienden estándares aplicados a las colecciones y pregunta si estos podrían propiciar una conducta ineficaz o éticamente comprometida. El articulo continúa haciendo preguntas difíciles a la profesión sobre lo que no puede hacer, lo que no entiende y dónde falla. Se concluye que aunque la conservación ha avanzado en el conocimiento de materiales y sus propiedades para informar la aplicación de estándares ambientales, se ha progresado significativamente menos en la comprensión de cómo y por qué los responsables de tomar decisiones introducen y aplican estándares.

摘要
"关于保存修复领域中不理想的环境实践之心理基础的思考"
作者以乔纳森·阿什利·史密斯（Jonathan Ashley Smith）在1994年国际文 物修护学会（IIC）预防性保护会议上发表的"让我们坦诚"的演讲和论文作为出发点，探讨引发环境标准演变上的巨大变化是否因技术或心理因素所致。作者思考了为做决策而划分了不同损害类型的影响，并探讨了在保存修复上将损害理解为一个过程而不是结果是否有助于警示性环境标准的形成。作者考虑了那些提倡藏品标准的人可能会采用的心理辩护，并探讨了这种心理是否会导致无效行为或道德上的妥协。作者还向专业人士求助关于"什么不能做"、"不明白"和"哪里有欠缺"等挑战性问题。文章最后总结道，尽管在保存修复领域人们为环境标准的实施在材料及其属性的了解方面取得了进展，但是在理解决策者引入和应用标准的方式和原因上的进展却很少。

Biography
Jane Henderson, BSc, MSc, PACR, FIIC, SFHEA, is a Reader in Conservation in Cardiff University and teaches on the BSc in Conservation and MSc's in Collection Care and in Conservation Practice. Jane serves as a trustee on the Welsh Federation of Museum and Art Galleries and The Cynon Valley Museum Trust and is currently serving on the editorial panel of the *Journal of the Institute for Conservation* and the ICOM-CC preventive conservation working group. Jane has published on issues related to: conservation decision-making, influence for collections care, sustainable conservation practice, teaching and assessing conservation.

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